

REMARKS

In this response to the Final Office Action, Applicant has amended the claims to correct typographical errors and to emphasize the nature of the audiovisual digital signal to be copy protected. Applicant acknowledges that new Claims 42 and 43 have been withdrawn from consideration as being directed to a non-elected invention. The following arguments are presented in rebuttal to the Examiner's comments in the outstanding Office Action.

The Hartung Reference is not Prior Art.

In the first Office Action, the Examiner rejected all pending claims as being unpatentable over Girod et al in view of Hartung et al. The Hartung reference is a paper entitled "Multi-Media Watermarking Techniques" published in the IEEE proceedings in 1999. In Applicant's response to the first Office Action, it was suggested that the Hartung reference was not prior art since its publication date was later than Applicant's claimed priority of January 8, 1998.

In the outstanding Office Action, the Examiner has taken the position that Hartung constitutes prior art because it was directed to an invention that was known or used by others in this country, as evidenced by the fact that the manuscript was presented for publication on October 20, 1997. Since this date precedes Applicant's claim of

priority, the Office Action suggests that, on its face, the Hartung paper represents prior art.

In response to this position of the Examiner, Applicant further notes that on its face, the Hartung reference indicates that the paper was revised on March 26, 1998 a date following Applicant's claim of priority. Thus, it can be said that at least a portion of the published paper cited by the Examiner contains subject matter that is not prior art. The Examiner has made no indication as to which portions were present in the original manuscript and which portions were added after Applicant's filing date. Accordingly, the publication cited by the Examiner must be set aside and cannot be treated as prior art.

In rejecting the claims over Girod et al in view of Hartung et al, the Examiner notes that Hartung et al was used to teach the step of utilizing an inverse copy protection function to convert the recovered copy protected signal back into a mirror encoded signal. It is further noted that Girod et al does not make it clear where a receiver obtains the pseudo-noise signal used to spread the watermark. (Final Office Action page six, first paragraph). From these statements it is clear that Girod fails to teach the limitations claimed by Applicant. Since Hartung et al does not constitute prior art, and since the remaining references fail to contemplate the omissions of Girod, the claims must be treated as allowable.

Watermarking Technology is Non-Analogous Art

It is clear from the Examiner's comments in the first Office Action that the Examiner views a watermark as the CP data signal in Applicant's invention. More specifically, at page 3 line 2 of the first Office Action, the Examiner states, "...the watermark is inserted using a frequency spreading signal, which meets Applicants data signal representing copy protection data..." This analogy fails for many reasons.

In Applicant's invention, the CP data signal is used to copy-protect an audiovisual signal. Using Applicant's invention, the audiovisual signal is rendered non-copyable or irretrievable in those locations where the signal is exposed, such as between a security module and a receiver. The copyability of the audiovisual signal is of primary concern. Applicant's CP data signal does not include information of any value. It exists solely for the copy protection of the audiovisual signal.

In contrast, this primary purpose of the CP data signal does not even approach the primary purpose of a watermark. A watermark is not used to copy-protect an audiovisual signal but rather to provide information of its own. As noted in the preamble of the Hartung et al paper, "...a watermark typically contains information about the origin, status, or recipient of the host data." It is further noted in Hartung et al, page 1079, column 2, third paragraph, that watermarks are intended to "convey as much information as possible." A watermark contains its own information, which is quite separate and unrelated to the host data, and has no purpose with respect to the host data.

The watermark is a digital code unremovably, robustly, and imperceptibly embedded in the host data and typically contains information about origin, status, and/or destination of the data. (Hartung et al. page 1079 lines 1-3).

Thus the watermark is a separate signal that is imperceptibly and inconspicuously embedded in the host data, and that contains its own information. The intent of the watermark is not to prevent copying, but to provide information in the event of copying. It is copyright protection that is the most prominent application of watermarking techniques.

Although not directly used for copy protection, [watermarking] can at least help identify source and destination of multi-media data and, as a "last line of defense," enable appropriate follow-up actions in case of suspected copyright violations. (Hartung et al. page 1079, column 2 lines 3-6).

The purpose of the watermark is to provide information that is hidden or imbedded in other data. (Hartung et al. page 1080, second column, second paragraph). It will be noted that in contrast, the CP data signal is not hidden, does not contain information of value, and has as its only purpose the copy protection of the underlying audiovisual signal. In the case of a watermark, its own hidden information is of primary importance.

Watermarking has the additional distinction of robustness against attacks. Even if the existence of the hidden information is known, it is difficult—ideally impossible—for an attacker to destroy the embedded watermark, even if the algorithmic principle of the watermarking method is public. In contrast, Applicant's CP data signal contains no information of value. Consequently it need not be hidden and need not be robust to prevent destruction. The whole purpose of the CP data system signal is copy protection.

“The watermark should, though being non-removable, be imperceptible.”

(Hartung et al, page 1081, second column, line 4). This emphasizes the fact that the underlying data signal is generally undisturbed. Great care is taken to embed the watermark without significantly altering the bit-stream of the host data. Importantly, it must be understood that in the case of a watermark, the underlying data is not copy protected.

It is for these reasons that the art relating to watermarks is diametrically opposed to the purposes of Applicant's invention. There is no reason for a person interested in copy protection to have any awareness of or interest in watermarks. As quoted above from the Hartung et al reference, watermarking is not directly used for copy protection. Accordingly, Hartung et al teaches away from the concept of copy protection, which is the primary purpose of Applicant's invention.

The watermark art is non-analogous, and would not necessarily be known to a person of ordinary skill in the art of copy protection. No one interested in recovering copy-protected data would refer to an art where the underlying data signal is not copy protected, but rather is intentionally relatively undisturbed. This is particularly true in the case of watermarks that are intended to be so imperceptible that the underlying signal can be copied without even knowing that a watermark is present.

Even Though Hartung et al is not Prior Art, the Cited Combination Fails to Meet the Limitations Recited in the Claims.

The claims remaining for prosecution include Claims 1, 3-8 and 10-14. Among these claims are independent Claims 1, 7, 8 and 14.

Claim 1 recites a method for copyrighting a digital audiovisual signal. The signal is initially encoded to obtain an encoded signal. The encoded signal is then copy protected with a copy protection function that utilizes a data signal representing copy protection data. In the cited references, there is no contemplation of copy protection, let alone copy protection of a digital audiovisual signal. There is no copy-protected signal, and no conversion of an encoded signal into a copy-protected signal using a copy protection function that utilizes a data signal representing copy protection data. Importantly, a watermark does not contain a data signal representing copy protection data nor is it used to copy protect an underlying digital audiovisual signal. Claim 1 and the claims dependant thereof should be allowable.

Claim 3 is dependent upon claim 1 and recites the patentable limitations of that claim. In addition, the step of transmitting is narrowed with the scrambling signal and the data signal defined as a single signal. Notwithstanding this further limitation, the cited art fails to disclose a scrambled signal that is copy protected.

Claim 4 is dependent upon claim 3 and recites the patentable limitations of both Claim 3 and Claim 1. In addition, the transmitting step is further defined to combine the scrambled signal and the data signal into a single signal. The art cited by the Examiner in

rejecting this claim does not contemplate a scrambled signal that is formed by scrambling a copy-protected signal.

Claim 5 is dependent upon claim 3 and ultimately on claim 1. Accordingly, it recites the patentable limitations already discussed. In addition, further steps are recited. Notably, Claim 5 includes a step for removing said copy protection data signal from the single signal. There is no copy protected data signal in the cited art, and there is no storage provided for the copy protection data represented by the copy protection data signal.

Claim 6 is dependent upon claim 1 and recites the patentable limitations of that claim. In addition, further steps are added such as the step for descrambling the scrambled signal. Importantly, the art cited in the Office Action fails to contemplate descrambling a scrambled signal that is formed by scrambling a copy-protected signal.

Claim 7 is an independent claim, which is drawn to a method for recovering an audiovisual signal from a digital signal including a copy protection data signal representing copy protection data. The initial step calls for extraction of the data signal from the digital signal. In the cited art there is no copy protection data signal that represents copy protection data. There is no storage of copy protection data and no recovery of copy protection data.

Claim 8 is an independent claim, which is drawn to a system for copy protecting a digital audiovisual signal. Initially the digital signal is encoded and then converted into a copy-protected signal using a copy protection function that utilizes a data signal representing copy protection data. In the cited art there is no copy protection signal let alone a signal that is modified by a copy protection function that uses a data signal representing copy protection data. Accordingly, Claim 8 and the claims dependent thereon should be allowable.

Claim 10 is dependent upon claim 8 and recites the patentable limitations of that claim. In addition, the combiner is more narrowly defined to combine the scrambled signal and the data signal. With respect to the cited art, there is no data signal representing copy protection data, and no scrambled signal derived by scrambling the copy-protected signal.

Claim 11 is dependent upon Claim 8 and recites the patentable limitations of that claim. In addition, it is recited that the scrambled signal and the data signal form a single signal that is transmitted to the receiver. With respect to the cited art, there is no data signal representing copy protection data and no scrambled signal derived by scrambling a copy protection signal.

Claim 12 is dependent upon claim 7 and recites the patentable limitations of that claim. In addition, claim 12 recites a processor for removing the data signal from the single signal and storing the copy protection data represented by the data signal. With

respect to the cited art, there is no data signal and no provision for storing copy protection data.

Claim 13 is dependent upon claim 8 and recites the patentable limitations of that claim. In addition, claim 13 recites a descrambler for descrambling the scrambled signal. With respect to the cited art, there is no scrambled signal that is derived from scrambling a copy-protected signal, and no recovery of a copy protected signal.

Claim 14 is an independent claim drawn to a system for recovering an audiovisual signal from a digital signal including a scrambled signal and a copy protected data signal representing copy protection data. Importantly, the cited art fails to disclose a descrambler for descrambling a recovered scrambled signal to recover a copy-protected signal.

IN CONCLUSION


The Hartung et al reference does not constitute prior art since unknown portions of the paper were added after Applicant's priority filing date. Notwithstanding this fact, Applicant has addressed the combination of Girod et al and Hartung et al in noting distinguishing limitations in the claims. The contemplation of a watermark in place of Applicant's CP data signal does not even accomplish Applicant's primary objective, notably, to provide an underlying audiovisual signal with copy protection. So far afield is the watermark art, that it would appear to be totally non-analogous and beyond the knowledge of anyone skilled in the copy protection art. Based on these considerations it

is suggested that the claims as presently amended clearly distinguish the cited art and any obvious extension thereof. The Examiners reconsideration and allowance of the application is earnestly requested.

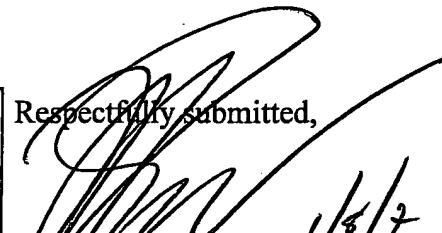
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